

BERGIA IN CUBA

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In 1866 Grisebach described Bergia sessiliflora from a wet meadow in Bayamo, Oriente, Cuba. The present writer early suspected the species to be the introduced B. capensis, and examination of a type number (Wright 2542) borrowed from the Gray Herbarium proved this definitely the case. Grisebach's name therefore takes its place in synonymy as follows:

BERGIA CAPENSIS L., Mant. 2:241. 1767.

B. aquatica Roxb., Coromand. 2:22, t. 142. 1798.

B. verticillata Willd., Sp. Pl. 2:770. 1799.

Elatine luxurians Delile, Fl. Egypte (Mém. Bot. Extraits...72, t. 26, fig. 1). 1813.

E. verticillata W. & A., Prodr. 41. 1834.

Bergia sessiliflora Gr., Cat. Pl. Cub. 40 (correction on p.287). 1866.

Linnaeus reported the species from the Cape of Good Hope, probably through error. His description otherwise holds rather well. Willdenow changed the specific epithet merely because the plant did not grow in the Cape. He gave the East Indies as its true station. The excellent plates presented by Roxburgh and by Delile clearly identify their species. The oldest illustration is that of Rheedee ("Pala-Tsjira". Hort. Malab. 9:t. 78. 1689); the two most recent are those of Mayuranathan (Bull. Madras Gov. Mus., N. Ser. 2:t. 3, fig. D. 1929) and of Lasser (Bol. Soc. Venez. Cien. Nat. 8:159. 1943). Wight and Arnott cited under Elatine verticillata a Plukenet figure (Phytographia, t. 132, fig. 6. 1691), but without justification. The sketch shows one of the branches pubescent, leaves entire, and the flower-glomerules in grouping and general habit different from those of B. capensis; it suggests Alternanthera sessilis (L.) R. Br.

Bergia capensis grows in wet places in India and North Africa, and it has been introduced to the West Indies and South America. The writer first studied the species eight years ago from a collection made by Father Arnoldo at Sabana, Bonaire (No. 411, Feb. 5, 1947; growing near water; specimen deposited in the Herbarium of the New York Botanical Garden), and it was at that time that he suspected the true identity of B. sessiliflora. Recently he named another specimen, collected by Acuña, Bennet and Pujals in Cuba, Arrocera de Baró, Consolación, Pinar del Rio (No. 19483, Dec. 16, 1954; N.Y.B.G.). Sphenoclea zeylanica Gaertner was also collected in the vicinity on the same day (No. 19484, Arrocera del Caribe; N.Y.B.G.). Another specimen of B. capensis, from Haiti, was distributed as B. sessiliflora: E. L. Ekman H. 2101, Plaine Cul-de-Sac, Port-au-Prince, Bon-Répos, in ditches, 9/10/24 (U.S.Nat.Herb.). B. sessiliflora

is cited in Moscoso's *Catalogus Florae Domingensis* (1943): "Plaine du Cul-de-Sac ad Beau". A Haitian collection by L. R. Holdridge, distributed as "Bergia sessiliflora", is a species of Elatine, probably new (No. 1875, Mare Etabli, Mornes des Commissaires, in standing water, Dec. 14, 1943; U.S.Nat.Herb., Mo.Bot.Gd.). It is relatively very large, long stemmed and luxuriant, the leaves up to 15 mm. long and 5 mm. broad, elliptic-lanceolate, obscurely punctate-crenate; flowers sessile, stamens 3, styles 2; seeds almost straight, 0.66 mm. long, pits about 16 in each of the approximately 10 rows. In South America Svenson collected B. capensis in Western Ecuador, prov. Guayas, pool north of Ancón (No. 11033, March 22-23, 1941; N.Y.B.G., U.S.Nat.Herb.); Macbride mentioned an Ecuador collection (Svenson's?) in his *Flora of Peru* in 1941. Lasser (in the *Boletin* cited above) announced a discovery of B. capensis in Venezuela, collected by Tamayo in January, 1939, on the shores of ponds at Pueblo Nuevo, Paraguana. The plant bore the vernacular name "Marite". The author noted that the finding of this species in Paraguana was of great interest for phytogeography; he referred to the Wagerian Theory of the origin of continents and posed the question whether the presence of B. capensis in both Paraguana and Egypt might be attributed to parallel evolution.

Self-pollination has been reported for Bergia. The present writer has observed, in herbarium material, the anthers contact the stigmas as the flower matures and leave packets of pollen firmly agglutinated to them, or often the anthers themselves become attached to the stigmas where they remain even when the ripe capsule dehisces. In the matured flower of B. texana (Hook.) Seubert the 5 short styles are spreading, cuneate and faintly 2-lobulate. The stigmatic portion face out and downward. The anthers are often seen separated from their filaments and dangling from the stigmas. The stamens opposite the sepals have the longer filaments; it appears that the anthers of these are the ones that become stuck to the stigmas. Seeds are produced abundantly in B. capensis; they are about 0.5 mm. long, straight or slightly curved, blunt at both ends, and strongly pitted. It is probable that B. capensis will spread considerably in tropical America and it may be expected even in the southern United States. Sphenoclea zeylanica, which grows in a habitat similar to that of B. capensis, has been established in Louisiana since at least 1886 (Gray, *Synop. Fl. N. Am.*).

The small hydrophytic family Elatinaceae has been allied with the Caryophyllaceae, Crassulaceae, Hypericaceae, etc.; its proper position is still provocatively speculative. It comprises two closely related genera. Elatine is cosmopolitan in distribution; it is found as far north as Newfoundland. Bergia, on the other hand, is predominantly Old World tropical to warm temperate. With the elimination of B. sessiliflora from our native flora, there remain two American species to account for. B. texana has a wide range in the western United States and is

amply represented in the herbarium. Although there are Old World species resembling B. texana, such as B. ammannioides Roth (indumentum different, flowers smaller, seeds about half the length) and B. serrata Blanco (pedicels longer), none was found identical with it. B. arenarioides (Cambess. ex St. Hil.) Fenzl was first described in 1829 from a collection by Saint-Hilaire "in paludosis prope vicum Salgado, in parte deserta occidentalique provinciae Minas Geraes." As far as could be learned, there is no report of a second collection. Niedenzu, who apparently examined a specimen, placed the species in a monotypic subsection. B. arenarioides is illustrated in St. Hilaire's Flora Brasiliae Meridionalis and in Martius' Flora Brasiliensis. It is a small radicant hairy resin-scented herb with long-pedicelled single axillary flowers and smooth seeds.

MATERIALS TOWARD A MONOGRAPH OF THE GENUS VITEX. II

Harold N. Moldenke

VITEX AGNUS-CASTUS L.

Additional literature: W. L. Phillips, Cat. Pl. Fairchild Trop. Gard. 41, 46, & 47. 1949.

In reference to the Standley collection of this species in Dona Ana County, New Mexico, in 1906, a letter received by me from Professor E. F. Castetter, dated January 31, 1955, states that in 27 years of botanical collecting in New Mexico he has never yet seen this species in that state.

Additional citations: CULTIVATED: Alabama: Hassan s.n. [Jefferson Co., July 1939, originally from Palestine] (Ba); Mohr s.n. [Pascacoula, June 28, 1890] (W--771905). Argentina: Stuckert 15585 (Cb), 18637 (Cb). Austria: Ehrhard 266 (Vu); Fenz s.n. [H. B.V.] (V); Herb. d'Aline s.n. [Lamotte, Vienne, 1839] (N); Sennholz s.n. [Vienna, 9/1894] (V). Barbados: Waby 115 (B). Belgium: Herb. Brux. s.n. (Br); Herb. Jardin Mercier s.n. (X); Lejeune s.n. [H. Leod.] (Br). Bermuda: Brown, Britton, & Wortley 1742 (N). Brazil: Elack 48-3635 (Be--38092). British Guiana: Parker s.n. (K). California: Eard s.n. [Sept. 1, 1929] (Du--193741); Bradbury s.n. [Letts, Hollywood, 7/15/1916] (Ba); Burt Davy s.n. [Berkeley, Sept. 25, 1899] (Ca--41692); Condit s.n. [June 14, 1910] (Ca--454851); Demaree 9272 (A, Au, Bt--17214, E--1063702); W. R. Dudley s.n. [2 Nov. 1904] (A, Du--215323); Eastwood s.n. [San Francisco, Oct. 1913] (Gg--31477), s.n. [Hollywood High School, Aug. 1915] (Gg--31477); H. M. Hall s.n. [Botanic Garden, Berkeley, Oct. 1902] (Ar--19753); Roxford s.n. [Fresno, Oct. 1914] (A, Gg--31479); Walther 361 (N); C. B. Wolf 1407 (Rs--11098). Canada: Inglis s.n. [30 Sept. 1916, Ontario] (Ba). Cuba: